## OUR LADY

of LOURDES

| MATHS SKILLS PROGRESSION |  |  |  |  |  |  |
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| EARLY YEARS FS2 | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 |
| Number - Number and Place Value |  |  |  |  |  |  |
| Children at the expected level of development will: <br> - Have a deep understanding of number to 10 , including the composition of each number; 14 <br> - Subitise (recognise quantities without counting) up to 5; <br> - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10 , including double facts. | Pupils should be taught to: <br> - count to and across 100, forwards and backwards, beginning with 0 or 1 , or from any given number <br> - count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens <br> - given a number, identify one more and one less <br> - identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least <br> - read and write numbers from 1 to | Pupils should be taught to: <br> - count in steps of 2,3 , and 5 from 0 , and in tens from any number, forward and backward <br> - recognise the place value of each digit in a two-digit number (tens, ones) <br> - identify, represent and estimate numbers using different representations, including the number line <br> - compare and order numbers from 0 up to 100; use and = signs <br> - read and write numbers to at least 100 in numerals and in words <br> - use place value and number facts to solve problems. | Pupils should be taught to: <br> - count from 0 in multiples of 4, 8 , 50 and 100; find 10 or 100 more or less than a given number <br> - recognise the place value of each digit in a three-digit number (hundreds, tens, ones) <br> - compare and order numbers up to 1000 <br> - identify, represent and estimate numbers using different representations <br> - read and write numbers up to 1000 in numerals and in words <br> - solve number problems and practical problems involving these ideas. | Pupils should be taught to: <br> - count in multiples of $6,7,9,25$ and 1000 <br> - find 1000 more or less than a given number <br> - count backwards through zero to include negative numbers <br> - recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) <br> - order and compare numbers beyond 1000 <br> - identify, represent and estimate numbers using different representations <br> - round any number to the nearest 10, 100 or 1000 <br> - solve number and practical problems | Pupils should be taught to: <br> - read, write, order and compare numbers to at least 1000000 and determine the value of each digit <br> - count forwards or backwards in steps of powers of 10 for any given number up to 1 000000 <br> - interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero <br> - round any number up to 1000000 to the nearest 10 , 100, 1000, 10000 and 100000 <br> - solve number problems and practical problems | Pupils should be taught to: <br> - read, write, order and compare numbers up to 10000000 and determine the value of each digit <br> - round any whole number to a required degree of accuracy <br> - use negative numbers in context, and calculate intervals across zero <br> - solve number and practical problems that involve all of the above. |


|  | 20 in numerals and words. |  |  | that involve all of the above and with increasingly large positive numbers <br> - read Roman numerals to 100 (I to C ) and know that over time, the numeral system changed to include the concept of zero and place value. | that involve all of the above <br> - read Roman numerals to 1000 (M) and recognise years written in Roman numerals. |  |
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|  |  | Number - Additi | n and Subtraction |  |  | Number Addition, Subtraction, Multiplication and Division |
| Children at the expected level of development will: <br> - Verbally count beyond 20, recognising the pattern of the counting system; <br> - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; | Pupils should be taught to: <br> - read, write and interpret mathematical statements involving addition $(+)$, subtraction (-) and equals (=) signs <br> - represent and use number bonds and related subtraction facts within 20 <br> - add and subtract one-digit and two- | Pupils should be taught to: <br> - solve problems with addition and subtraction: <br> - using concrete objects and pictorial representations, including those involving numbers, quantities and measures <br> - applying their increasing knowledge of | Pupils should be taught to: <br> - add and subtract numbers mentally, including: <br> - a three-digit number and ones <br> - a three-digit number and tens <br> - a three-digit number and hundreds <br> - add and subtract numbers with up to three digits, using formal written methods of columnar | Pupils should be taught to: <br> - add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate <br> - estimate and use inverse operations to check answers to a calculation <br> - solve addition and subtraction twostep problems in contexts, deciding | Pupils should be taught to: <br> - add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) <br> - add and subtract numbers mentally with increasingly large numbers <br> - use rounding to check answers to calculations and | Pupils should be taught to: <br> - multiply multidigit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication <br> - divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, |



|  |  | and use this to check calculations and solve missing number problems. |  |  |  | calculations involving the four operations <br> - solve addition |
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| Number - Multiplication and Division |  |  |  |  |  |  |
|  | Pupils should be taught to: <br> - solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. | Pupils should be taught to: <br> - recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers <br> - calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs <br> - show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | Pupils should be taught to: <br> - recall and use multiplication and division facts for the 3,4 and 8 multiplication tables <br> - write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods <br> - solve problems, including missing number problems, involving multiplication and division, including | Pupils should be taught to: <br> - recall <br> multiplication and division facts for multiplication tables up to $12 \times$ 12 <br> - use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1 ; dividing by 1; multiplying together three numbers <br> - recognise and use factor pairs and commutativity in mental calculations <br> - multiply two-digit and three-digit numbers by a onedigit number using formal written layout | - Pupils should be taught to: <br> - identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers <br> - know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers <br> - establish whether a number up to 100 is prime and recall prime numbers up to 19 <br> - multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers | problems in contexts, deciding which operations and methods to use and why <br> - solve problems involving addition, subtraction, multiplication and division <br> - use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. |



|  |  |  |  | - solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign <br> - solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. |  |
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| Number - Fractions, Decimals and Percentages |  |  |  |  |  |
| Pupils should be taught to: <br> - recognise, find and name a half as one of two equal parts of an object, shape or quantity <br> - recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. | Pupils should be taught to: <br> - recognise, find, name and write fractions $1 / 3,1 / 4$, $2 / 4$ and $3 / 4$ of a length, shape, set of objects or quantity <br> - write simple fractions for example, $1 / 2$ of 6 $=3$ and recognise the equivalence of $2 / 4$ and $1 / 2$. | Pupils should be taught to: <br> - count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 <br> - recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions | Pupils should be taught to: <br> - recognise and show, using diagrams, families of common equivalent fractions <br> - count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and | Pupils should be taught to: <br> - compare and order fractions whose denominators are all multiples of the same number <br> - identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths | Pupils should be taught to: <br> - use common <br> factors to <br> simplify <br> fractions; use common multiples to express fractions in the same denomination <br> - compare and order fractions, including fractions > 1 <br> - add and subtract fractions with |


|  |  |  | with small denominators <br> - recognise and use fractions as numbers: unit fractions and nonunit fractions with small denominators <br> - recognise and show, using diagrams, equivalent fractions with small denominators <br> - add and subtract fractions with the same denominator within one whole [for example, 5/7 $+1 / 7=6 / 7]$ <br> - compare and order unit fractions, and fractions with the same denominators <br> - solve problems that involve all of the above. | dividing tenths by ten. <br> - solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number <br> - add and subtract fractions with the same denominator <br> - recognise and write decimal equivalents of any number of tenths or hundredths <br> - recognise and write decimal equivalents to $1 / 4$, $1 / 2$ and $3 / 4$ <br> - find the effect of dividing a one- or two-digit number by 10 and 100 , identifying the value of the digits in the answer as ones, tenths and hundredths | - recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 52 + $54=56=151$ ] <br> - add and subtract fractions with the same denominator and denominators that are multiples of the same number <br> - multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams <br> - read and write decimal numbers as fractions [for example, $0.71=$ 71/100] <br> - recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents | different <br> denominators <br> and mixed <br> numbers, using <br> the concept of equivalent <br> fractions <br> - multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $1 / 4 \times 1 / 2=1 / 8$ ] <br> - divide proper fractions by whole numbers [for example, $1 / 3 \div 2=1 / 6]$ <br> - associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] <br> - identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10,100 and |
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|  |  |  |  | - round decimals with one decimal place to the nearest whole number <br> - compare numbers with the same number of decimal places up to two decimal places <br> - solve simple measure and money problems involving fractions and decimals to two decimal places. | - round decimals with two decimal places to the nearest whole number and to one decimal place <br> - read, write, order and compare numbers with up to three decimal places <br> - solve problems involving number up to three decimal places <br> - recognise the per cent symbol (\%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal <br> - solve problems which require knowing percentage and decimal equivalents of 21 , 41, 51, 52,54 and those fractions with a denominator of a | 1000 giving answers up to three decimal places <br> - multiply onedigit numbers with up to two decimal places by whole numbers <br> - use written division methods in cases where the answer has up to two decimal places <br> - solve problems which require answers to be rounded to specified degrees of accuracy <br> - recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. |
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Measurement

Pupils should be
taught to:

- compare, describe and solve practical problems for:
- lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- mass/weight [for example, heavy/light, heavier than, lighter than]
- capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
- time [for example, quicker, slower, earlier, later]
- measure and begin to record the following:
- lengths and heights
- mass/weight

Pupils should be $\quad$ Pupils should be taught to:

- choose and use appropriate standard units to estimate and measure length/height in any direction ( $\mathrm{m} / \mathrm{cm}$ ); mass (kg/g); temperature ( ${ }^{\circ} \mathrm{C}$ ); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =
- recognise and use symbols for pounds ( $£$ ) and pence (p); combine amounts to make a particular value


## taught to:

- measure, compare, add and subtract: lengths ( $\mathrm{m} / \mathrm{cm} / \mathrm{mm}$ ); mass (kg/g); volume/capacity ( $1 / \mathrm{ml}$ )
- measure the perimeter of simple 2-D shapes
- add and subtract amounts of money to give change, using both $£$ and $p$ in practical contexts
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in
terms of seconds,

Pupils should be taught to:

- convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of rectangles (including squares), and including using

Pupils should be taught to:

- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- convert between miles and kilometres
- recognise that shapes with the

|  | - capacity and volume <br> - time (hours, minutes, seconds) <br> - recognise and know the value of different denominations of coins and notes <br> - sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] <br> - recognise and use language relating to dates, including days of the week, weeks, months and years <br> - tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. | - find different combinations of coins that equal the same amounts of money <br> - solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change <br> - compare and sequence intervals of time <br> - tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times <br> - know the number of minutes in an hour and the number of hours in a day. | minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight <br> - know the number of seconds in a minute and the number of days in each month, year and leap year <br> - compare durations of events [for example to calculate the time taken by particular events or tasks]. |  | standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes <br> - estimate volume [for example, using 1 cm 3 blocks to build cuboids (including cubes)] and capacity [for example, using water] <br> - solve problems involving converting between units of time <br> - use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. | same areas can have different perimeters and vice versa <br> - recognise when it is possible to use formulae for area and volume of shapes <br> - calculate the area of parallelograms and triangles <br> - calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3]. |
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| Geometry - Properties of Shape |  |  |  |  |  |  |
|  | Pupils should be taught to: | Pupils should be taught to: | Pupils should be taught to: | Pupils should be taught to: | Pupils should be taught to: | Pupils should be taught to: |

- recognise and name common 2-
D and 3-D shapes, including:
- 2-D shapes [for example,
rectangles (including squares), circles and triangles]
- 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].
- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects.
- draw 2-D shapes
and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
- identify horizontal and vertical lines and pairs of perpendicular and parallel lines.
- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to two right angles by size
- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry.

| - identify 3-D |
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| shapes, including |
| cubes and other |
| cuboids, from 2-D |
| representations |

- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees
- identify:
- angles at a point and one whole turn (total 360 degrees)
- angles at a point on a straight line and $1 / 2$ a turn (total 180 degrees)
- other multiples of 90 degrees
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about
- draw 2-D shapes using given dimensions and angles
- recognise,
describe and build simple 3-D shapes, including making nets
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and

|  |  |  |  | equal sides and angles. | find missing angles. |
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| Geometry - Position and Direction |  |  |  |  |  |
| Pupils should be taught to: <br> - describe position, direction and movement, including whole, half, quarter and three-quarter turns. | Pupils should be taught to: <br> - order and arrange combinations of mathematical objects in patterns and sequences <br> - use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and threequarter turns (clockwise and anticlockwise). |  | Pupils should be taught to: <br> - describe positions on a 2-D grid as coordinates in the first quadrant <br> - describe movements between positions as translations of a given unit to the left/right and up/down <br> - plot specified points and draw sides to complete a given polygon. | Pupils should be taught to: <br> - identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. | Pupils should be taught to: <br> - describe positions on the full coordinate grid (all four quadrants) <br> - draw and translate simple shapes on the coordinate plane, and reflect them in the axes. |
| Statistics |  |  |  |  |  |
|  | Pupils should be taught to: <br> - interpret and construct simple pictograms, tally charts, block diagrams and simple tables | Pupils should be taught to: <br> - interpret and present data using bar charts, pictograms and tables <br> - solve one-step and two-step | Pupils should be taught to: <br> - interpret and present discrete and continuous data using appropriate graphical methods, | Pupils should be taught to: <br> - solve comparison, sum and difference problems using information presented in a line graph | Pupils should be taught to: <br> - interpret and construct pie charts and line graphs and use these to solve problems |

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|  |  | - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity <br> - ask and answer questions about totalling and comparing categorical data. | questions [for example, 'How many more?’ and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. | including bar charts and time graphs <br> - solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. | - complete, read and interpret information in tables, including timetables. | - calculate and interpret the mean as an average. |
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| Ratio and Proportion |  |  |  |  |  |  |
| R |  |  |  |  |  | Pupils should be taught to: <br> - solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts <br> - solve problems involving the calculation of percentages [for example, of measures, and such as $15 \%$ of 360] and the use of percentages for comparison |

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|  |  |  |  |  | - solve problems involving similar shapes where the scale factor is known or can be found <br> - solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. |
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| Algebra |  |  |  |  |  |
|  |  |  |  |  | Pupils should be taught to: <br> - use simple formulae <br> - generate and describe linear number sequences <br> - express missing number problems algebraically <br> - find pairs of numbers that satisfy an equation with two unknowns <br> - enumerate possibilities of combinations of two variables. |

